

What is claimed is:

1 1. A thin film transistor, comprising:
2 a cooling layer formed on a substrate,
3 an insulating layer formed on said cooling layer, a heat
4 conductivity of said cooling layer being higher than that of said
5 insulating layer, and
6 a semiconductor layer which is formed on said insulating layer
7 and comprises a drain region, a channel region and a source region,
8 wherein said cooling layer is locally close to at least one
9 of said drain region, said channel region and said source region.

1 2. A thin film transistor according to claim 1, wherein:
2 at least one of said drain region, said channel region and
3 said source region is shaped to be close to said cooling layer .

1 3. A thin film transistor according to claim 1, wherein:
2 said cooling layer is shaped to be close to said at least one
3 of said drain region, said channel region and said source region.

1 4. A thin film transistor according to claim 1, wherein:
2 a gate electrode is formed on said channel region, and said
3 drain region closely approaches said cooling layer.

1 5. A thin film transistor according to claim 1, wherein:
2 said cooling layer has a light-shading property.

1 6. A method for fabricating a thin film transistor, comprising

2 the steps of:

3 forming a cooling layer with a high heat conductivity on
4 a substrate,

5 forming an insulating layer with a lower heat conductivity
6 than that of said cooling layer on said cooling layer,

7 locally thinning said insulating layer,

8 forming a semiconductor layer on said locally thinned insulating
9 layer, and

10 irradiating said locally thinned insulating layer with an energy
11 beam.

1 7. A method for fabricating a thin film transistor, comprising
2 the steps of:

3 forming a semiconductor layer on a substrate,

4 forming a cooling layer with a higher heat conductivity than
5 that of said semiconductor layer on said semiconductor layer,

6 patterning said cooling layer,

7 irradiating said semiconductor layer and said cooling layer
8 with an energy beam, and

9 removing at least a portion of said cooling layer.

1 8. A thin film transistor fabricated on an insulating layer
2 formed on a substrate, comprising:

3 an insulated gate electrode; and

4 an active layer including a source region, a drain region and
5 a channel region which are composed of a semiconductor layer
6 formed on said insulating layer;

7 wherein a part of said active layer is of a single crystal

8 layer.

1 9. The thin film transistor as defined in claim 8, wherein:
2 a rest of said active layer is of a polycrystalline layer.

1 10. The thin film transistor as defined in claim 8, wherein:
2 said part of said active layer is said channel region.

1 11. The thin film transistor as defined in claim 8, wherein:
2 said rest of said active layer comprises said source region
3 and said drain region.